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## OFFICE MEMORANDUM

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**DATE:** June 17, 1999

**TO:** Region Engineers/Administrators  
Associate Region Engineers for Delivery/Operation  
Region Construction Engineers  
TSC Managers  
Delivery/Resident/Project Engineers  
Region Materials Engineers  
Region Materials Supervisors  
Region Maintenance Engineers

**FROM:** C. Thomas Maki  
Chief Operations Engineer

Gary D. Taylor  
Chief Engineer/Deputy Director  
Bureau of Highway Technical Services

**SUBJECT:** Bureau of Highway Instructional Memorandum 1999-8  
Contract Administration and Oversight Guidelines for Warranty Work  
(Supersedes Joint Construction and Maintenance Circular Letter 1997-B)

*This memo supersedes Joint Construction and Maintenance Circular Letter 1997-B: Contract Administration and Oversight Guidelines for Warranty Work on Preventive Maintenance Projects.*

Capital Preventive Maintenance (CPM) Projects with warranty work in the areas of bituminous overlay, bituminous crack treatment, microsurfacing, chip seals, and concrete pavement repair have been in place since June 1997. In 1998, two rehabilitation and reconstruction projects piloted the use of five year concrete and five year bituminous pavement warranties.

In 1999, most of the CPM projects will be warrantied and the use of five year warranties on rehabilitation and reconstruction projects has increased.

The CPM bituminous paving warranty and the five year warranties on rehabilitation and reconstruction projects are best described as materials and workmanship warranties. This means the contractor is responsible for all materials and workmanship issues, and the department is responsible for the integrity of design and field conditions encountered. The warranty only pertains to performance problems that can be related to materials supplied, or workmanship that is shown to be not in compliance with the contract requirements.

In addition to becoming familiar with the specific special provisions for warranty work and for documentation of construction items and contractor quality control (CQC) for pavement warranty, the following are guidelines for contract administration and oversight for warranty work at the project level.

**PRE-CONSTRUCTION MEETING:*****In General for all Projects With Warranties -***

In the course of the normal pre-construction meeting, items pertinent to the warranty work and the contractor's quality control responsibility should be discussed as applicable. The project's CQC special provision should be discussed at the meeting. Requirements for documentation of the warranted items should be reviewed. As a minimum, the contractor needs to complete on a daily basis the "Contractor's Daily Report" (Attachment A) and is responsible for timely submission of the daily report (within 24 hours of preparation).

***For CPM Projects -***

For CPM projects with bituminous pavement warranties, the CQC special provision should be discussed. The contractor's method for determining random core locations should be provided, discussed, and approved at the meeting. It should be emphasized that there are no bituminous quality initiatives or penalties allowed on CPM projects with bituminous pavement warranties.

For CPM chip seal warranty projects, the contractor is to provide asphalt emulsion and coarse aggregate unit prices at the pre-construction meeting. The contractor has a right to change the application rate of the emulsion and aggregate depending on field conditions and price adjustments are made to reflect the actual material usage.

For CPM bituminous crack treatment warranty projects, if the contractor does not choose to use the typical crack reservoir detail provided in the contract documents, they are to submit to the engineer their changes to the detail at the pre-construction meeting. This is so the engineer can verify that the crack reservoir used during construction is in accordance with the detail.

**PRE-PAVING ON-SITE MEETING:*****In General for all Projects With Warranties -***

Per specification, an on-site meeting prior to the start of the warranty work is required. The items to be reviewed at the on-site meeting include the contractor's detailed work schedule; the CQC plan; and the contractor's Daily Report, associated documentation, and their submittal to the project office. Suggested participants in the on-site meeting are those individuals involved in the performance of work on the projects, as well as those involved in the preparation and submittal of the project's paperwork.

**CQC Plan**

Review of the contractor's CQC Plan is the primary basis for this meeting. CQC discussions should center on what happens when deficiencies related to construction procedures and/or workmanship are encountered during performance of warranty work. The resident engineer and staff must be assured that sufficient safeguards are incorporated into the CQC plan that will: 1) minimize construction-related workmanship deficiencies and, 2) assure that the contractor will take the necessary steps to immediately correct the ongoing work up to and including removal of the deficient pavement.

Various scenarios should be discussed with the contractor to “test” the quality control plan and to reassure MDOT project personnel that the contractor will react to the warranty portion of the project in the same manner as MDOT if they had been inspecting the project. The on-site meeting should be held enough in advance of the warranty work items so that adjustments to and approval of the CQC plan can take place. Refer to the attached Guidelines for Quality Control Plan Review by MDOT (Attachment D) when determining the acceptability of the CQC plan.

### **Contractor’s Daily Report/Inspector’s Daily Report Worksheet**

The current version of the Special Provision for Documentation of Construction Items requires the contractor to submit a Contractor’s Daily Report (refer to Attachment A for all projects except CPM crack treatment, which require the completion of Attachment B for the daily report). To facilitate prompt payment to the contractor and more accurate data entry by MDOT office personnel, the contractor should be asked to prepare an Inspector’s Daily Report Worksheet (Attachment C) in addition to the Contractor’s Daily Report. Instructions as to the preparation of the Inspector’s Daily Report Worksheet and its submittal should be given at the on-site meeting.

### **Maintaining Traffic/Traffic Control Plan**

The Special Provision for Maintaining Traffic and the traffic control plan should be reviewed and discussed in depth at the on-site meeting. The contractor is to assure MDOT that a sufficient number of traffic control devices exist to comply with the traffic control plan.

#### **For CPM Projects -**

For CPM microsurfacing and chip seal warranty projects, the contractor will calibrate and adjust the equipment settings prior to production. The calibration and equipment settings should be documented and given to the engineer at the on-site meeting or prior to the start of production.

### **INSPECTION AND DOCUMENTATION BY THE CONTRACTOR AND MDOT:**

#### **In General for all Projects With Warranties -**

- The contractor’s responsibilities include complying with all specification and plan requirements, and following their approved CQC Plan.
- MDOT’s responsibility is to assure that the contractor is meeting all the contract requirements for the warrantied work.
- Per Subsection 104.01 of the *1996 Standard Specifications for Construction*, the authority of the engineer is maintained for projects with warrantied work items.
- MDOT must provide oversight on warranty projects to the extent necessary to assure meeting contract requirements.
- The level/frequency of MDOT oversight may vary based on the project size, experience level of the contractor, and/or “comfort level” of MDOT with the contractor.

- MDOT should visit the site periodically to assure that the contractor is performing work according to the specifications and to spot check pay quantities.

**For CPM Projects -**

For CPM projects that include both cold-milling and bituminous paving with warranty, it is important to understand that the warranty does not apply to the cold-milling item of work. Therefore, MDOT is responsible for the oversight of the cold-milling operation, and its oversight is crucial to controlling of the bituminous quantities.

For CPM bituminous paving warranty projects, Form 1911 (Job Mix Formula - Bituminous Field Communication) is not required. For all of these projects, the department will measure the initial Ride Quality Index (RQI). Due to the volume of CPM bituminous paving warranty projects, upon completion of the paving, the engineer should drive the project to assess ride quality. If the project rides well with no apparent roughness, then no RQI will be measured. If the project “feels” rough enough to warrant measurement, the engineer should contact the Construction and Technology Division of MDOT (517-322-5711) to schedule the RQI determination.

**For Five Year Bituminous Pavement Warranty Projects -****Quality Control/Quality Assurance Testing**

The contractor is responsible for meeting all requirements of the Special Provision for Bituminous Mixture and Pavement Density Acceptance. The contractor’s responsibilities are identical to those for non-warranted bituminous pavement projects.

The traveling mix inspector’s responsibilities are to prepare and distribute the Job Mix Formula (JMF), coordinate and attend pre-production meetings, and approve changes to the JMF. MDOT must still have a qualified plant inspector performing sampling and acceptance testing of the bituminous mixtures.

At the paving site, an MDOT technician is to lay out the random core locations.

The engineer is responsible for reviewing the contractor test results, and incentive and disincentive calculations.

**On-Site Paving Inspection**

The contractor’s responsibilities for on-site inspection include all requirements of Section 501 of the *1996 Standard Specifications for Construction* and all special provisions, supplemental specifications, and plan requirements.

The engineer is responsible for assuring that the contractor is meeting all contract requirements for all contract items, including the warranted items.

The engineer should make periodic site visits during the contractor’s bituminous paving operations. Several construction activities should be monitored at the time of the site visit. Refer to Attachment E (MDOT Checklist for Bituminous Paving with Warranty) for the list of activities.

**Documentation**

The contractor is responsible for documenting the warrantied item of work according to the Special Provision for Documentation of Bituminous Construction Items. As discussed previously, contractor's Daily Reports/Inspector's Daily Report Worksheets should be prepared and submitted daily. In addition, the contractor should record the mixture temperature at the paving site. The contractor is also responsible for providing all materials testing documentation and the recording of the same on the contractor's Daily Report.

The engineer is responsible for the timely review of the contractor's Daily Reports/Inspector's Daily Report Worksheets. Errors and omissions to these reports should be brought to the attention of the contractor. The engineer is responsible for documenting the QA testing at the plant according to the Special Provision for Bituminous Mixture and Pavement Density Acceptance. The engineer must also document the random selection and location of pavement cores. An example field core worksheet is contained on Page 502-39 of Division 5 of the *Construction Manual*.

Periodic field checks made by the engineer of the on-site paving operations of the contractor should be documented. Attachment E (MDOT Checklist for Bituminous Paving With Warranty) identifies important items to observe during the paving operation that need to be documented. The engineer may elect to use a modified version of the checklist. Deficiencies noted during the periodic field checks should be communicated to the contractor.

**For Five Year Concrete Pavement Warranty Projects -**

**Quality Assurance Testing**

The engineer is responsible for performance of quality assurance (QA) testing in accordance with the Special Provision for Furnishing Portland Cement Concrete (Quality Assurance). The contractor's testing responsibilities are also outlined. The contractor's testing responsibilities are identical to those for non-warrantied concrete paving projects.

**On-site Paving Inspection**

The contractor's responsibilities for on-site inspection include all requirements of Section 602 of the *1996 Standard Specifications for Construction* and all special provisions, supplemental specifications, and plan requirements.

The engineer is responsible for assuring that the contractor is meeting all contract requirements for all contract items of work, including warrantied items.

The engineer should make periodic site visits during the contractor's concrete paving operations. Several construction activities should be monitored at the time of the site visit. Refer to Attachment F (MDOT Checklist for Concrete Paving With Warranty) for the list of activities.

**Documentation**

The contractor is responsible for documenting the warrantied item of work according to the Special Provision for Documentation of Concrete Construction Items. As discussed previously, contractor's Daily Reports/Inspector's Daily Report Worksheets should be prepared and submitted on a daily basis. The

contractor is also responsible for providing all materials testing documentation and the recording of the same on the daily reports.

The engineer is responsible for the timely review of the contractor's Daily Reports/Inspector's Daily Report Worksheets. Errors and omissions to these reports should be brought to the attention of the contractor.

Periodic field checks made by the engineer of the on-site paving operations of the contractor should be documented. Attachment F (MDOT Checklist for Concrete Paving With Warranty) identifies important items to observe during the paving operation that be documented. The engineer may elect to use a modified version of the checklist. Deficiencies noted during the periodic field checks should be communicated to the contractor.

### **WARRANTIED AND NON-WARRANTIED ITEMS ON THE SAME PROJECT**

Warranty projects will contain both warrantied and non-warrantied contract items. Items of work that are not warrantied will follow the normal procedures and require inspection by MDOT and either certification or testing and proper documentation. The contractor is responsible for completing and submitting the contractor's Daily Report/Inspector's Daily Report Worksheet for the warrantied item of work only.

### **INITIAL ACCEPTANCE FOR WARRANTIED PROJECTS**

At the completion of construction of the warrantied work, the engineer and the contractor will review the work for compliance with the contract. If the work is deemed by the engineer to not be in compliance, the contractor is required to remedy all deficiencies in materials and/or workmanship. Any photos, videos, etc., in the engineer's possession that document non-compliance with the contract should be shared with the contractor at this point. When the work is in compliance, the form entitled Initial Acceptance of Warranty Work Approval that is a part of the Special Provision for Documentation of Bituminous (or Concrete) Construction Items (or Attachment G, Initial Acceptance for Preventive Maintenance Warranty for CPM warranty projects) should be used to document initial acceptance.

A portion of a project may be initially accepted at the discretion of the engineer. Such partial acceptance requests should be submitted in writing by the contractor and approved by the engineer prior to the start of any work on the segment. If such initial acceptance is granted, the warranty period will begin at the time of acceptance only if the section is continuously opened to traffic. This agreement must be documented in writing to avoid later claims to the contrary.

On projects with multiple job numbers, or with several segments of the project initially accepted at different times, the bottom box of the Initial Acceptance For Warranty Form should not be filled in until the very last job or the very last segment on the project is in compliance and has received initial acceptance. The last job's or segment's date accepted should match the acceptance date in the bottom box. When the bottom box is completed, it is the contractor's responsibility to submit a copy of the form to the surety company and the engineer's responsibility to submit a copy of the form to Financial Services Division, Payments Unit. At this point in time, the warranty bond begins. The warranty bond expires at the end of the designated warranty period. The warranty bond is a part of the project's financial files and moves to general files for storage with the final estimate documents from Financial Services.

On these projects with multiple job numbers and/or multiple segments with different initial acceptance dates, the designated warranty period begins on the date the job and/or segment is initially accepted, even though the warranty bond itself does not begin until the last job and/or segment on the project is initially accepted. Because of this, it is possible to have the warranty period for a job and/or segment expire before the warranty bond expires. The engineer should not ask for corrective work on a job and/or segment where the warranty period has expired.

The engineer should be sure that all test results, certifications, and documentation are received for the warranted item of work before making initial acceptance. This documents that all warranty work was performed in accordance with the contract requirements.

### **SUPPLEMENTAL PERFORMANCE BONDS AND LIEN BONDS/INSURANCE FOR POTENTIAL WORK DURING THE WARRANTY PERIOD**

In addition to the warranty bond that is in place, if corrective work is necessary on warranted items, the contractor is to furnish the engineer supplemental performance and lien bonds covering the corrective work. The engineer is responsible for estimating the amount of bonds required. The amount should be approximately equal to the dollar amount of the corrective work. The contractor is also to have appropriate insurance in place prior to performing corrective work in the warranty period. The engineer should contact Financial Services Division, Awards Unit (517-335-6730) to verify insurances are in place. The contractor should not be allowed on-site to perform corrective work during the warranty period until the Supplemental Performance and Lien Bonds are in place and the proper insurances verified.

### **FINAL ESTIMATE/FINAL ACCEPTANCE OF THE PROJECT:**

For warranty projects the final estimate should be submitted and the project should be final accepted, as the warranty requirement does not delay the project finaling process.

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Chief Operations Officer

#### Attachments

Subject Index: Warranty Work

BOHTS:C/T:MLL:jp

cc: Lansing C&T Division Engineers  
Lansing C&T Division Technicians  
OEO, A. Suber  
Real Estate Division, M. Frierson  
Design Division, P. Miller  
Maintenance Division, C. Roberts  
G. Taylor  
T. Maki

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Chief Engineer/Deputy Director

FHWA - J. Steele	J. Culp
MRBA	J. Staton
MAPA	D. Smiley
MCA	S. Cook
MCPA	R. Till
MAA	R. Endres
AUC	T. Hynes
CRAM	G. Mayes

V. Blaxton  
B. Jay  
R. Knapp  
J. Klee

K. Trentham  
J. Reincke  
S. R. Kulkarni  
J. Ruszkowski

P. O'Rourke  
D. Smiley  
L. Galehouse  
B. MacNall



# GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY M•DOT

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1. **The contractor is responsible for all plan specification and special provision requirements.**
  - ▶ Same as all non warrantied projects
  - ▶ MDOT is responsible for Acceptance Testing per CQC and QA/QC specifications
  - ▶ The contractor is responsible for all incentive calculations
  
2. **On site inspection**
  - ▶ The contractor is responsible for all Section 502 (Bituminous) or 602 (Concrete) requirements in the 1996 Standard Specifications
  - ▶ Refer to Modification of Section 502 or Section 602 and the Authority of the Engineer in 104.01
  - ▶ The work site should be visited by the Engineer often enough to reasonably assure that the contractor is performing work in accordance with the CQC plan and that the contractor's paving operations are in compliance with acceptable levels for workmanship.
  
3. **The contractor must utilize the plan and show commitment to it.**
  
4. **The plan must stress quality and commitment to job control.**
  
5. **The plan must give assurance that the contractor will perform work in accordance with the Specifications.**
  
6. ***Typical Acceptable CQC Plan for The Inspection Work (relates to concrete paving but is adaptable for bituminous paving as well)***
  - ▶ Organizational Chart Submitted
    - S Include lines of authority; and duties and responsibilities
    - S May be a "combined" chart to also comply with the QA/QC specifications
    - S The CQCSM (Contractor Quality Control System Manager) must be identified per specification
  - ▶ List contract items covered under the CQC Plan (i.e.; all pavement warranty items)
  - ▶ List of items the Quality Control Inspector checks before paving/before trucks arrive/when concrete arrives
  - ▶ Include example of the Contractor's Daily Report identifying:
    - S Equipment used
    - S Mix design
    - S Paving schedule; start and stop times, pour locations and types
    - S Dowels
    - S Tie bars
    - S Texturing
    - S Tining

# GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY M•DOT

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- S Curing
  - S Transverse and longitudinal saw cut time and types
  - S Type of seal for transverse and longitudinal joints
- ▶ List type of supplemental forms used to document the following:
  - S Materials handling
  - S Paving inspection (see below)
  - S Joint inspection (see below)
  - S Truck delivery times and tests
  - S Interim cylinder breaks
  - S Interim beam breaks
- ▶ **Paving Inspection Forms.** Typical items addressed:
  - S Inspector and date locations
  - S Weather
  - S Subbase (OGDC) Condition
  - S String line
  - S Forms
    - ★ Grade/Locked/Perpendicular/Supported/Line
  - S Equipment
    - ★ Pour width
    - ★ Cure/texture machine (including spacing, alignment, spray pattern)
    - ★ Batch trucks (check for cleanliness)
  - S Dowel baskets
    - ★ Check dowel size, alignment, layout, level, height, secured, assembly, spacing for expansion joints, felt size, and caps in proper position.
  - S Dowel bar inserter equipment interim checks during paving
  - S Tie bars
    - ★ Horizontal spacing for all types
  - S Edge slump
  - S Crown
  - S Alignment of slab
  - S Vertical face
  - S Tining
  - S Texture of surface
  - S Curing; type/coverage/uniformity
  - S Concrete placement method
  - S Computed yield
  - S Comments on above items
- **Joint Inspection Report.** Typical items addressed:
  - ▶ Date/Inspector/weather

# GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY M•DOT

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- ▶ Sawing
    - Relief cut (approximate time after placement)
      - Transverse (depth/width/alignment, raveling/spalling)
      - Longitudinal (depth/width/alignment, raveling/spalling)
  - S Widening cut
    - ★ Transverse (depth/width/alignment/cleanliness/sand blast)
    - ★ Longitudinal (depth/width/alignment/cleanliness/sand blast)
  - S Sealing
    - ★ Transverse Contraction (neoprene size/adhesive/adherence/per specs)
    - ★ Expansion (form size/sealant/thickness)
    - ★ Longitudinal (sealant/properly placed)
  - S Comments on above items
- **Report of placement of concrete.**
  - ▶ Weather/date/location/inspector
  - ▶ Information including truck number/batch time/start/empty/slump/temperature/air/number of cylinders
- **Report of concrete strengths (cylinder or beam) for interim open-to-traffic.**
  - ▶ Includes slump/air/temperature/air placed/mix design
  - ▶ 1/2/3/7/28 day strengths
- **Report of concrete tests.** Addressed in the QA/QC requirements for concrete.
- **Pework coordination.**
  - ▶ Nature of work, methods, contract requirements, submittals, preparatory steps
- **Test procedures.** ( As needed to fulfill the QA/QC for Concrete Spec and the CQC Specification.)
  - ▶ If ASTM C\_\_ type tests for concrete
  - ▶ Acceptance testing to be performed by MDOT per requirements
  - ▶ Frequencies
  - ▶ Also, other tests for joint steel/epoxy/hot pour/neoprene/cure/etc.
- **Noting and reporting of deficiencies and noncompliance with the CQC requirements.**
  - ▶ CQCSM immediately notified
  - ▶ Investigates and produces written descriptions
  - ▶ Log of deficiency
  - ▶ If portions of pavement cannot be brought back into conformance, then a recommended corrective action is made.
  - ▶ If confirmed, then notice to MDOT Engineer, with recommendation of action to be taken
  - ▶ Approval by MDOT Engineer to take action before start

## GUIDELINES FOR QUALITY CONTROL PLAN REVIEW BY M•DOT

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- ▶ CQCSM to supervise inspection of corrective work
- ▶ If corrective work acceptable, deficiency is closed out.  
S No invalidation of warranty occurs.
- **Record keeping and documentation.** For CQC portion only (Minimum).
  - ▶ File system; including approvals of submittals, methods, inspection and test reports, deficient work corrections, test procedures, changes and modifications, material storage, records, quality verification, meeting minutes, contractor IDRs, acceptance of work completed, qualifications of inspectors
- **Submittal review and schedule.**
  - ▶ Time frame for review, log, fix, and transmit of all required submittals and test reports, including subcontractors
- **Audit procedures.**
  - ▶ Time that checks are made on all CQC documents, subcontractors, and material suppliers utilizing a proposed checklist to review all CQC inspection of workmanship and all material CQC records for adequacy and accuracy.
- **Qualifying personnel.** Description and proof of qualification
- **Quality control technicians** and their previous experience.

# MDOT CHECKLIST FOR BITUMINOUS PAVING WITH WARRANTY

Attachment E

Note: Work this checklist with footnotes on back of checklist.

C.S./JOB NUMBER \_\_\_\_\_ DATE \_\_\_\_\_

RESIDENT ENGINEER \_\_\_\_\_

CONTRACTOR \_\_\_\_\_

	Satisfactory	Less Than Satisfactory	N/A
Traffic Control of the Work in Progress <sup>1</sup>	G	G	G
Proper Use of Traffic Control Devices to Protect Shoulders	G	G	G
Proper Use of Temporary and Permanent Pavement Markings	G	G	G
Bond Coat Application	G	G	G
Edge Alignment	G	G	G
Grade & Slope Requirements	G	G	G
Automatic Grade Referencing (9m ski and slope control)	G	G	G
Longitudinal Joint (Tapered or Vertical & Slope Control) <sup>2</sup>	G	G	G
Constant Head of Material <sup>3</sup>	G	G	G
Joint Lines to Correspond with Lanelines	G	G	G
Rubber Tire Rollers Only Used When Specified	G	G	G
Assure the Existing Pavement is Clear and Dry	G	G	G
Transverse Construction Joints <sup>4</sup>	G	G	G
Watch for Indications of Flushing and Segregation That Could Affect the Warranty Requirements	G	G	G
Watch for Signs of Over Compaction (Breaking Stone) That Could Affect the warranty requirements	G	G	G
Assure the Contractor Following the Approved CQC Plan <sup>5</sup>	G	G	G

COMMENTS:

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MDOT Signature

## **FOOTNOTES FROM FRONT**

1. Check handling of ramp traffic, flagging operation(s), staging requirements.
2. The vertical joint requires bumping; check that the roller matches the width of tapered joint; prohibit use of fuel oil for release agent.
3. Be sure augers running 90 percent of time; that augers and tunnels are extended when paving additional width; and that paving speed is coordinated with plant production.
4. Assure night joints and startup joints are constructed according to specifications.
5. Be sure Contractor is correcting unsatisfactory materials and workmanship; monitor the Contractor's method of performing yield checks, and make sure they are performing yield checks for determination of pay quantities.

# MDOT CHECKLIST FOR CONCRETE PAVING WITH WARRANTY

Attachment F

**Note: Work this checklist with footnotes on back of checklist.**

**C.S./JOB NUMBER** \_\_\_\_\_ **DATE** \_\_\_\_\_

**DELIVERY ENGINEER** \_\_\_\_\_

**CONTRACTOR** \_\_\_\_\_

	Satisfactory	Less Than Satisfactory	N/A
Traffic Control of the Work in Progress <sup>1</sup>	G	G	G
Proper Use of Traffic Control Devices to Protect Shoulders	G	G	G
Proper Use of Temporary and Permanent Pavement Markings	G	G	G
OGDC Condition	G	G	G
Forms <sup>2</sup> /String line/Track line	G	G	G
Materials at Plant and Site	G	G	G
Equipment (Spreader, Paver, Cure, Texture, Batch Trucks)	G	G	G
Consolidating, Finishing, Straight-edging and Floating	G	G	G
Dowel Baskets <sup>3</sup>	G	G	G
Dowel Bar Inserter (DBI) <sup>4</sup>	G	G	G
Steel Reinforcing Mesh	G	G	G
Tie Bars (Depth, Construction and Contraction Horizontal/Vertical Spacing)	G	G	G
Edge Slump; Vertical Face; Edging	G	G	G
Crown (Straight-edge) and Slab Alignment	G	G	G
Surface Texture, Burlap, Tining (Depth, Width, Spacing)	G	G	G
Stationing Numbers	G	G	G
Curing (Timely, Uniform, Coverage)	G	G	G
Concrete Delivery Placement Method, Minimal Segregation <sup>5</sup>	G	G	G
Relief Cuts (Transverse and Longitudinal) <sup>6</sup>	G	G	G
Transverse and Longitudinal Joints (Contraction and Expansion, Final Sawing) <sup>7</sup>	G	G	G
Joint Seals (All Types) <sup>8</sup>	G	G	G
Concrete and Load Reports <sup>9</sup>	G	G	G
Concrete Strength Reports For Interim Opening <sup>10</sup>	G	G	G
Assure the Contractor Following the Approved CQC Plan (Correcting Unsatisfactory Materials and Workmanship)	G	G	G

**COMMENTS:** \_\_\_\_\_

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## FOOTNOTES FROM FRONT

1. Check handling of ramp traffic, flagging operation(s), staging requirements.
2. Check grade of forms and whether they are locked and perpendicular.
3. Check dowel size, alignment, layout, level, height, secured, assembly, spacing for expansion joints: felt size, caps in proper position.
4. Check performance per specifications, test sections per specifications, and wet checks per specifications.
5. For minimal segregation, check spreader, material transfer device, direct placement, voids and/or cold joints, proper consolidation, proper head of material at screeds, minimal use of finish water, proper night and end header installation.
6. Check for depth, width, alignment, raveling, spalling.
7. Widening cut (transverse and longitudinal) (check for depth; width; alignment; raveling; spalling).
8. Contraction joints (neoprene size; adequate adhesive; side adhesive) Expansion Joints (felt size, check for voids, sealant type, and thickness).
9. Record truck number, batch/discharge time, slump, air, number of cylinders.
10. Check mix design, age, beams/cylinders, strength, weather.